TYPE APPROVAL CERTIFICATE

Certificate no.:
TAE00001U5
Revision No:
4

This is to certify:

that the Frequency Converter

with type designation(s)
Unidrive M600, M700, M701 & M702

issued to
Nidec Control Techniques Ltd.
Newtown, Powys, **United Kingdom**

is found to comply with
DNV rules for classification – Ships, offshore units, and high speed and light craft

Application:

Products approved by this certificate are accepted for installation on all vessels classed by DNV.

Issued at **Høvik** on **2024-10-11**

This Certificate is valid until **2029-06-30**.
DNV local unit: **UK & Ireland CMC & VMC**

Approval Engineer: **Georgy Abramenko**

for **DNV**

Oddvar Deinboll
This document has been digitally signed and will therefore not have handwritten signature

This Certificate is subject to terms and conditions overleaf. Any significant change in design or construction may render this Certificate invalid.
The validity date relates to the Type Approval Certificate and not to the approval of equipment/systems installed.

Name and place of manufacturer

Nidec Control Techniques Ltd., Newtown, Powys, United Kingdom
Leroy Somer Electro-Technique (Fuzhou) Co., Ltd. Shenzhen Guangming Branch Guangming District, Shenzhen, China
Kinetek de México, S. de R.L. de C.V. Apodaca Nuevo Leon 66600 Mexico

Product description

Variable speed controller / Frequency converters for asynchronous motor. For use in marine and offshore applications.

Unidrive M600, M700, M701 & M702 - 400V models

Type	Power [kW] at 45 ºC Heavy duty	Current [A] at 45 ºC Heavy duty	Frame size
Single drive (AC-AC)			
M600, M700, M701, M702-034 00025A	0,75	2,5	3
M600, M700, M701, M702-034 00031A	1,1	3,1	3
M600, M700, M701, M702-034 00045A	1,5	4,5	3
M600, M700, M701, M702-034 00062A	2,2	6,2	3
M600, M700, M701, M702-034 00078A	3	7,8	3
M600, M700, M701, M702-034 00100A	4	10	3
M600, M700, M701, M702-044 00150A	5,5	15	4
M600, M700, M701, M702-044 00172A	7,5	17,2	4
M600, M700, M701, M702-054 00270A	11	27	5
M600, M700, M701, M702-054 00300A	15	30	5
M600, M700, M701, M702-064 00350A	15	35	6
M600, M700, M701, M702-064 00420A	18,5	42	6
M600, M700, M701, M702-064 00470A	22	47	6
M600, M700, M701, M702-074 00660A	30	66	7
M600, M700, M701, M702-074 00770A	37	77	7
M600, M700, M701, M702-074 01000A	45	100	7
M600, M700, M701, M702-084 01340A	55	134	8
M600, M700, M701, M702-084 01570A	75	157	8
M600, M700, M701, M702-094 02000A	90	200	9
M600, M700, M701, M702-094 02240A	110	224	9
M600, M700, M701, M702-124 04800 T	250	480	12
M600, M700, M701, M702-124 05660 T	315	566	12
M600, M700, M701, M702-124 06600 T	355	654	12
M600, M700, M701, M702-124 07200 T	400	691	12
M600, M700, M701, M702-125 03150 T	250	315	12
M600, M700, M701, M702-125 03600 T	300	360	12
M600, M700, M701, M702-125 04100 T	330	410	12
M600, M700, M701, M702-125 04600 T	370	460	12
M600, M700, M701, M702-126 03150 T	250	315	12
M600, M700, M701, M702-126 03600 T	300	360	12
M600, M700, M701, M702-126 04100 T	330	410	12
M600, M700, M701, M702-126 04600 T	370	460	12
Single drive (AC-AC) with external line choke	**Single drive**	**Single drive**	**Single**
M600, M700, M701, M702-094 02000E	M600, M700,	M600, M700,	M600,
M600, M700, M701, M702-094 02240E	M600, M700,	M600, M700,	M600,

M600, M700, M701, M702-104 02700E	M600, M700,	M600, M700,	M600,
M600, M700, M701, M702-104 03200E	M600, M700,	M600, M700,	M600,
M600, M700, M701, M702-114 03770 E	M600, M700,	M600, M700,	M600,
M600, M700, M701, M702-114 04170 E	M600, M700,	M600, M700,	M600,
M600, M700, M701, M702-114 04640 E	M600, M700,	M600, M700,	M600,

Modular drive (DC-AC)			
M600, M700, M701, M702-094 02000D	90	200	9
M600, M700, M701, M702-094 02240D	110	224	9
M600, M700, M701, M702-104 02700D	132	270	10
M600, M700, M701, M702-104 03200D	160	320	10
M600, M700, M701, M702-114 03770D	185	377	11
M600, M700, M701, M702-114 04170D	200	417	11
M600, M700, M701, M702-114 04640D	250	464	11
M600, M700, M701, M702-124 04800 D	250	480	12
M600, M700, M701, M702-124 05660 D	315	566	12
M600, M700, M701, M702-124 06600 D	355	654	12
M600, M700, M701, M702-124 07200 D	400	691	12
M600, M700, M701, M702-125 03150 D	250	315	12
M600, M700, M701, M702-125 03600 D	300	360	12
M600, M700, M701, M702-125 04100 D	330	410	12
M600, M700, M701, M702-125 04600 D	370	460	12
M600, M700, M701, M702-126 03150 D	250	315	12
M600, M700, M701, M702-126 03600 D	300	360	12
M600, M700, M701, M702-126 04100 D	330	410	12
M600, M700, M701, M702-126 04600 D	370	460	12
Modular drive (AC-DC 6 pulse) with external line choke			
RECT-104 04520A	N/A	452	10
RECT-114 06840A	N/A	684	11

Unidrive M600, M700, M701 & M702 - 690V models

Type	Power [kW] at 45 ºC Heavy duty	Current [A] at 45 ºC Heavy duty	Frame size
Single drive (AC-AC)			
M600, M700, M701, M702-076 00190A	15	19	7
M600, M700, M701, M702-076 00240A	18,5	24	7
M600, M700, M701, M702-076 00290A	22	29	7
M600, M700, M701, M702-076 00380A	30	38	7
M600, M700, M701, M702-076 00440A	37	44	7
M600, M700, M701, M702-076 00540A	45	54	7
M600, M700, M701, M702-086 00630A	55	63	8
M600, M700, M701, M702-086 00860A	75	86	8
M600, M700, M701, M702-096 01040A	90	104	9
M600, M700, M701, M702-096 01310A	110	131	9
Single drive (AC-AC) with external line choke			
M600, M700, M701, M702-096 01040E	90	104	9
M600, M700, M701, M702-096 01310E	110	131	9
M600, M700, M701, M702-106 01500E	132	150	10
M600, M700, M701, M702-106 01780E	160	178	10
M600, M700, M701, M702-116 02100E	185	210	11
M600, M700, M701, M702-116 02380E	200	238	11

M600, M700, M701, M702-116 02630E	250	263	11
Modular drive (DC-AC)			
M600, M700, M701, M702-096 01040D	90	104	9
M600, M700, M701, M702-096 01310D	110	131	9
M600, M700, M701, M702-106 01500D	132	150	10
M600, M700, M701, M702-106 01780D	160	178	10
M600, M700, M701, M702-116 02100D	185	210	11
M600, M700, M701, M702-116 02380D	200	238	11
M600, M700, M701, M702-116 02630D	250	263	11
Modular drive (AC-DC 6 pulse) with external line choke			
RECT-106 02480A	N/A	248	10
RECT-116 04520A	N/A	452	11

Application/Limitation

Supply voltage range:	380 - 480 V/ 500 - 690 V, 50/60 Hz
Voltage variation:	± 10 %
Frequency variation:	± 10 %
Output frequency:	0 - 599 Hz up to 37 kW ranges, 0 - 500 Hz for the other.
Temperature range in operation:	+ 5 to +45 °C
Protection degree:	IP20
Temperature class:	A
Vibration class:	A
Humidity class:	A
EMC class:	IEC 61800-3. To be used on EMC class A locations (see below).

Product certification:
For drives equal or larger than 100kW a DNV product certificate is needed. The following documents shall be submitted for approval:
- Reference to this Type Approval Certificate;
- Functional description for the intended use, configuration and interface (e.g. alarms, monitoring and auxiliary power supplies);
- Test program for routine tests and functional tests;
- Single line diagram (only applicable for multi drive configuration);
- If additional components apart from the type approved frequency converter are part of the delivery, documentation in accordance with DNV rules Pt.4 Ch.8 Sec.1 table 2 shall be delivered for the additional components.

The power range can be extended by connecting drives in parallel. See Control Techniques document: Unidrive M Modular Installation Guide, CT part number: 0478-0141-07.

Type Approval documentation

Technical info:
“DNV Approval Submission – Adjustable Speed Drives Unidrive-M and Derivative Products” doc.no. 1-000-032-035 rev. 00.03 dated 2021-02-06.
“Unidrive M: High Power Modular AC Drives” and “Unidrive M: Drives for Industry”, brochures from Control Techniques.
Test Reports:
Assessment report including dry heat and damp heat tests dated 2021-12-22.
Nidec EMC Test Reports doc. nos.1-000-047-483 dated 2018-10-29, 1-000-048-322 dated 2018-09-05, 1-000-048-830 dated 2018-10-17 & 1-000-049-833 dated 2018-05-10. Nidec Frame 12 Capacitor Discharge Test doc. no 1-000-050-418 dated 2019-11-08, GT8 Frame 12, MOV Surge Suppression doc. no 1-000-050-435 dated 2019-11-11.
Element “Vibration and Shock Testing for Uni-M Frame Size 12 Drive” doc. no. TRA-047086-21-CR-01B issue B dated 2020-03-16.
Heat run test data (The O’ Leary Converter) dated 2019-07-04.
EMC Test Report doc no. EMV TP 022 dated 2015-02-23. Controll Techniques Dry Heat Test dated 2017-01-17. UL test reports nos. 4786503605 dated 2015-07-10, 478507195 dated 2016-07-12, 4786503605 dated 2015-06-16, Light load and function (Verification of the interface between Active rectifier in Large Frame stage GT09 and GT11.) Light load and function (Verification of the interface between Active rectifier in Large Frame stage GT09 and GT11.
Documentation as listed in cross reference list 262.1-015971-1, j-63 dated 2015-01-09.

Tests carried out

Tests according to DNV Rules Pt.4 Ch.8 Sec.7 Table 5.

Marking of product

Type designation (typecode):

M600/700/701/702 - xxy zzzzzn
xx: frame [03-11]
y: voltage [4=400V, 6=690V~~A~~]
zzzzz: current rating x10
n: configuration A = rectifier or AC-AC drive, D = DC-AC inverter, E = docked configuration (rectifier + inverter)

Periodical assessment

The scope of the periodical assessment is to verify that the conditions stipulated for the Type Approval is complied with and that no alterations are made to the product design or choice of materials.

The main elements of the assessment are:
• Inspection on factory samples, selected at random from the production line (where practicable)
• Results from Routines (RT) checked (if not available tests according to RT to be carried out)
• Review of type approval documentation
• Review of possible change in design, materials and performance
• Ensuring traceability between manufacturer's product type marking and Type Approval Certificate.

Assessment to be performed at 2 and 3.5 year and at renewal.

END OF CERTIFICATE